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Noninvasive regional oximetry correlates with direct laser doppler measurement of intestinal perfusion

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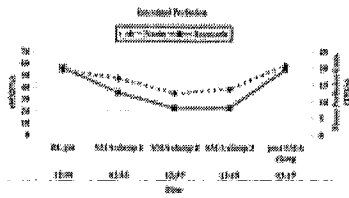
INTRODUCTION: Regional oximetry has recently been established as a reliable, noninvasive method of monitoring cerebral perfusion in stroke patients. This novel technology uses near-infrared spectroscopy (NIRS) to measure regional oxygen saturation (rSO₂) and has enabled early identification of compromised cerebral perfusion induced by stroke, thus improving ischemic intervention response time. The objective of this study was to test the hypothesis that rSO₂ would correlate with definitive measures of intestinal perfusion. Acute mesenteric ischemia is notoriously difficult to diagnose without invasive arteriography and the resultant delay in treatment contributes to its high 50% mortality. Our specific aim was to determine if rSO₂ could serve as a noninvasive indicator of gut perfusion.

METHODS: Pigs (n=2) were anesthetized and instrumented for monitoring. Through a laparotomy, a laser doppler flowprobe (Transonic® Inc) was sutured to the serosa of the ileum for measurement of perfusion. A rSO₂ probe (Nonin Inc. Equanox Regional Oximeter™) was placed on the abdominal wall directly over the Doppler probes. Gut perfusion was altered by graded clamping of the superior mesenteric artery.

RESULTS: See figure, R² = .94.

CONCLUSIONS: Regional oximetry can identify a reduction in gut perfusion, which may improve diagnosis of acute mesenteric ischemia.

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